

SUBARACHNOID HAEMORRHAGE

RECOGNITION AND ASSESSMENT

Symptoms and signs

- Severe headache of sudden onset (becoming severe within seconds and no longer than one minute) implies subarachnoid haemorrhage (SAH) until proved otherwise. It may be associated with vomiting and loss of consciousness, with subsequent photophobia and neck stiffness

Symptoms can sometimes resolve within a few hours but should still be investigated with CT scan of head. Thirty percent of patients with SAH may have 'minor' leaks hours or days before the major haemorrhage, which are often misdiagnosed as simple headaches or migraine

- Unexplained coma or seizures with subsequent persistent severe headache can indicate acute SAH

Investigations

- CT scan of head– within 24 hr of admission, if possible
- If initial CT normal (especially if performed more than 24-72 hr after initial headache onset) and clinical suspicion for SAH high, based on appropriate history, exclude SAH completely by CSF analysis (see **Practical procedures – Lumbar puncture** guideline) at least **12 hr** after symptom onset, measuring:
 - opening pressure
 - xanthochromia
 - routine CSF analysis (MC&S, glucose and protein)
- Send blood for glucose, protein and bilirubin with CSF sample
- Record time from headache onset in hours/days on CSF xanthochromia request card (to allow best assessment)
- Protect sample from light and send urgently via porter (**NOT POD**) to clinical chemistry
- Click on revised CSF guidelines for CSF interpretation: [Revised national guidelines for analysis of cerebrospinal fluid for bilirubin in suspected subarachnoid haemorrhage -- Cruickshank et al. 45 \(3\): 238 -- Annals of Clinical Biochemistry](#)

When lumbar puncture performed, send sample to clinical biochemistry immediately for centrifugation to allow CSF spectrophotometry for xanthochromia. This is especially important if tap was traumatic. Then you will send the least blood contaminated sample. You must warn clinical biochemistry before you send sample.

Differential diagnosis

- Meningitis
- Encephalitis
- Cerebral venous sinus thrombosis (with raised opening pressure)

IMMEDIATE TREATMENT

- If consciousness impaired, check airway and maintain it
- Codeine phosphate 30-60 mg orally (or 60 mg IM) 4 hrly as required up to maximum 240 mg in 24 hr
- Observe respiratory effort and monitor ECG
- If SAH confirmed, bleep neurosurgical registrar on call at QEH to discuss patient. Send radiological images via PACS image link.

SUBSEQUENT MANAGEMENT

(After discussion with neurosurgical team at QEH)

- Nimodipine 60 mg orally 4 hrly including throughout night. If unconscious, crush tablets and give as soon as possible via nasogastric tube
- Manage blood pressure – see **Stroke guideline – Immediate treatment Blood pressure**
- If no contraindication, give sodium chloride 0.9% at least 3 L by IV infusion every 24 hr
- Use calf stimulators as DVT prophylaxis (if available and patient is remaining at New Cross for more than 24hrs before transfer)

If improving and stable:

- In confirmed SAH, consider CT angiography at earliest opportunity

If not improving or deteriorating:

- Think about:
 - metabolic cause (diabetes insipidus, hyponatraemia, hypoxia)
 - hydrocephalus
 - acute rebleed
- Consider further CT scan of head

MONITORING TREATMENT

- Until headache has subsided and patient stable, monitor 4 hrly:
 - Glasgow coma score
 - neurological observations
 - pulse
 - BP
 - temperature
- When stable, monitor BP twice daily in patients taking nimodipine

DISCHARGE AND FOLLOW-UP

- As a rule, CT angiography is carried out with a view to operative treatment. If no operative intervention planned, continue oral nimodipine for a total of 21 days. Discharge after two to four weeks and review in out-patient clinic
- If patient hypertensive, treat BP according to national guidelines e.g. British Hypertension Society <http://www.bhsoc.org>